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was upsetting the very foundations upon which heating and ventilating science was built.

It seems as if there must be somewhere in existence the knowledge which we need at the present time. Man has become in a comparatively few years a preeminently house-abiding creature. He lives in localities which are paved, where there is little opportunity for evaporation, which is a necessary condition for human living. Present conditions are not right. Does any one know in what respect our present schemes of ventilation are wrong, why delicate children and tuberculous persons get well out of doors, and fail to do so in-doors, and what we need to do to make in-door living as healthy as out-door living? If we can find the answers to these questions we shall have discovered something which will affect the vitality of all the children, and ultimately of all the adults, who live in buildings throughout the civilized world.

Any reference to original sources which any of your readers can give will be most gratefully welcomed.

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"MUTATIONS" OF WAAGEN AND "MUTATIONS"
OF DE VRIES OR "RECTIGRADATIONS" OF
OSBORN

It is important to distinguish clearly between what may be called the "mutations" of Waagen, the "mutations" of De Vries, and the rectigradations of Osborn. By careful examination of Waagen's original paper and the usage of this paper on the continent by subsequent paleontologists it appears certain that the mutations of Waagen are stages of transition between Linnæan species occurring in direct lines of phyletic ascent. These stages are distinguished by progress, although perhaps very slight in a number of different characters. The mutations of De Vries have not been distinguished in paleontology, but only in botany, and through botany extended to zoology. They represent the sudden or discontinuous jumps or saltations through which new characters arise. Definite direction is given to these characters only through selec-

tion. The "rectigradations" of Osborn are different in significance from either of the above; the term refers to the stages of single new characters occurring at definite points, hence originally termed by Osborn "definite variations." The mutations of De Vries can not be used by paleontologists, with whom the original term *saltation* would be preferable.

HENRY FAIRFIELD OSBORN

SCIENTIFIC BOOKS

Inheritance of Characteristics in Domestic Fowl. By CHARLES B. DAVENPORT. Carnegie Institution of Washington, Publication No. 121. Pp. i + 100, Pl. 1-12. 1909. Issued February 7, 1910.

This quarto volume contains a detailed account of the results of the continuation of the studies on inheritance in domestic poultry carried out by Dr. Davenport at the Station for Experimental Evolution at Cold Spring Harbor, the first instalment of the results of these investigations having appeared as Carnegie Institution Publication No. 52. A great mass of new and interesting facts are brought forth in the present work. The book is divided into twelve chapters, of which the first eleven deal severally with some of the characters which experience shows to be most difficult of definite analysis in respect to their hereditary behavior. Nearly every character discussed is one which at first acquaintance appears not at all to follow Mendelian principles (at least in their simplest form) in inheritance. Because of this fact they are of all the greater interest and significance to the student of heredity, and any systematic and thorough attempt at their analysis, such as is here made, is most heartily to be welcomed and commended, even though one may not be prepared to accept *in toto* the final interpretations reached. The extensive collection of facts brought together in this work loses none of its value if the theoretical interpretation should later be changed.

Chapter I. deals with the inheritance of the split or Y comb which appears in the progeny of a cross between a single-combed bird and one possessing a V or "horned" comb, such as